

Recovery Plan Action Status**Plan Name: Approved Recovery Plan for the Tumbling Creek Cavesnail (Antrobia culveri)****Plan Status: Final****Plan Date: 22-Sep-03****Lead Agency: USFWS****Lead Office: Columbia Ecological Services Field Office****(234-2132)**

Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Tumbling Creek cavesnail (Antrobia culveri)	2	1.1.1	Conduct searches in adjacent caves	Complete	FY 2000 - FY 2004	FY 2006	J. Lewis, Missouri Department of Conservation, Missouri Western State College, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	1.1.2	Sample streams & wells with new techniques	Ongoing Current	FY 2000 - FY 2004	FY 2012	J. Lewis, Missouri Department of Conservation, Missouri Western State College, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	1.1.3	Survey karst window	Complete	FY 2000 - FY 2004	FY 2009	J. Lewis, Missouri Department of Conservation, Missouri Western State College, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	

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Tumbling Creek cavesnail (Antrobia culveri)	1	1.2.1	Develop propagation methodologies using surrogate species	Ongoing Current	FY 2005	FY 2011	U.S. Fish and Wildlife Service, U.S. Geological Survey, To be determined, Missouri Department of Conservation, Neosho National Fish Hatchery, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	Studies to identify the cause(s) of snail mortality in the propagation system are being undertaken by Dr. John Besser and other personnel of the USGS Columbia Environmental Research Center (CERC; Columbia Missouri) through an inter-agency agreement. CERC has extensive laboratory facilities for aquaculture and aquatic toxicology and has ongoing research efforts involving culture and toxicology of freshwater snails, including several endangered species. In addition to the surrogate snail species tested at OUL, CERC has maintained cultures of several freshwater snail species, including the Ozark springsnail, (Fontigens aldrichi), a pond snail (Lymnaea stagnalis), and a pebblesnail, Fluminicola sp.). Studies are currently ongoing. USGS scientists are continuing to conduct laboratory experiments to isolate possible cause(s) of mortality, including water sources (OUL well water, stream water from Tumbling Creek Cave, and CERC control water), components of water delivery lines,

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										<p>and components of culture chambers. Samples of water and/or snail tissue will be analyzed to verify potential causal agent(s) associated with mortality. USGS scientists will provide progress summaries and a final report at the end of the project period (one year after funding is received) containing summaries of the laboratory studies and recommendations for improved success of ex-situ and in-situ snail propagation systems. USGS scientists will also provide technical assistance for re-establishment of snail propagation efforts. In the upcoming year, CERC personnel will continue to work with FWS personnel in identifying appropriate surrogate species and materials for testing. Substantial progress was made by the USGS Columbia Environmental Research Center during the last reporting period related to propagation efforts and conducting water quality studies on well water that is to be used for propagation efforts. New equipment and a new pump were installed to</p>

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										facilitate to reinitiate propagation efforts using a surrogate species of Physa. The pump will enable stream water rather than well water to be used for propagation studies. With the new structures in place, it is now estimated that it will take another 2-3 to complete propagation efforts.
Tumbling Creek cavesnail (Antrobia culveri)	1	1.2.2	Develop a propagation plan for the species	Planned	FY 2007	FY 2011	U.S. Fish and Wildlife Service, New York State Office of Parks, Recreation and Historic Preservation, U.S. Geological Survey, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	Development of propagation plan is still underway but completion has not been possible due to other higher priorities.
Tumbling Creek cavesnail (Antrobia culveri)	1	1.2.3	Conduct propagation studies using Antrobia	Planned	FY 2007	FY 2012	U.S. Fish and Wildlife Service, U.S. Geological Survey, Missouri Department of Conservation, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	This action is still planned but can not be initiated until captive propagation acitons can be completed on surrogate species.

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Tumbling Creek cavesnail (Antrobia culveri)	1	2.1.1	Identify potential refuse sites and abandoned homesteads within recharge area	Complete	FY 2000 - FY 2004	FY 2005	U.S. Fish and Wildlife Service, New York State Office of Parks, Recreation and Historic Preservation, U.S. Geological Survey, Missouri Department of Conservation, Missouri Resource Assessment Partnership, Ozark Underground Laboratory, Taney County Soil and Water Conservation District, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	1	2.1.2	Continue cleanup of refuse sites within the recharge area of Tumbling Creek Cave	Ongoing Current	FY 2000 - FY 2004	FY 2012	U.S. Environmental Protection Agency, To be determined, Michigan Department of Natural Resources, Ozark Underground Laboratory, Taney County Soil and Water Conservation District	Work type not yet selected	Labor type not yet selected	Cave owners Tom and Cathy Aley continue to purchase adjacent properties within the recharge area of Tumbling Creek Cave. Following the recent purchase on a small parcel, they discovered a new dump that is scheduled for clean up within the next 2-3 years.
Tumbling Creek cavesnail (Antrobia culveri)	1	2.1.3	Continue cleanup of abandoned homesteads within the recharge area of Tumbling Creek Cave	Complete	FY 2000 - FY 2004	FY 2005	U.S. Environmental Protection Agency, To be determined, Michigan Department of Natural Resources, Ozark Underground Laboratory, Taney County Soil and Water Conservation District	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$15000

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Tumbling Creek cavesnail (Antrobia culveri)	1	2.1.4	Improve human sewage treatment disposal facilities and proper abandonment of unused wells	Ongoing Current	FY 2005	FY 2008	U.S. Environmental Protection Agency, To be determined, Michigan Department of Natural Resources, Taney County Soil and Water Conservation District	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$20000
Tumbling Creek cavesnail (Antrobia culveri)	1	2.1.5	Improve waste treatment in areas with high density livestock	Ongoing Current	FY 2000 - FY 2004	FY 2008	U.S. Environmental Protection Agency, Michigan Department of Natural Resources, Taney County Soil and Water Conservation District, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	FY5 through 20
Tumbling Creek cavesnail (Antrobia culveri)	3	2.10	Develop programs for the removal & disposal of feral hogs within the recharge area of Tumbling Creek Cave	Ongoing Current	FY 2000 - FY 2004	FY 2011	U.S. Fish and Wildlife Service, To be determined, Missouri Department of Conservation, Ozark Underground Laboratory, Taney County Soil and Water Conservation District	Work type not yet selected	Labor type not yet selected	Feral hogs continue to pose a threat for increased sedimentation within the cave's recharge area. In early August 2009, land managers with the Missouri Department of Conservation were successful in capturing and euthanizing 7 feral hogs. Additionally, they placed a radio transmitter on another hog in an attempt to locate and eliminate other members of the herd.

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Tumbling Creek cavesnail (Antrobia culveri)	1	2.2.1	Continue to restore and rehabilitate riparian corridors	Ongoing Current	FY 2000 - FY 2004	FY 2012	Missouri Department of Conservation, Ozark Underground Laboratory, Taney County Soil and Water Conservation District, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	Cave owners Tom and Cathy Aley continue to conduct multiple restoration projects on land they own within the recharge area of Tumbling Creek Cave. This includes anti-erosion and bank stabilization within stream corridors, the conversion of fescue pasture to warm season grasses, control of exotic species, and prairie and savannah restoration.
Tumbling Creek cavesnail (Antrobia culveri)	2	2.2.2	Recommend improved livestock grazing systems & practices	Not Started			U.S. Forest Service, Missouri Department of Conservation, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	2.2.3	Recommend alternative water sources for livestock	Not Started			Missouri Department of Conservation, U.S. Fish and Wildlife Service, Partners for Fish and Wildlife, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	3	2.2.4	Develop management guidelines for extraction of minerals, gas, & oil	Not Started			U.S. Fish and Wildlife Service, Michigan Department of Natural Resources, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	

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Tumbling Creek cavesnail (Antrobia culveri)	3	2.2.5	Encourage the voluntary enrollment of private land owners into landowner incentive programs	Not Started			Farm Services Administration, Missouri Department of Conservation, U.S. Fish and Wildlife Service, Partners for Fish and Wildlife, Taney County Soil and Water Conservation District, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$80000
Tumbling Creek cavesnail (Antrobia culveri)	2	2.3	Protect land when possible through acquisition and/or conservation agreements/easements	Ongoing Current	FY 2000 - FY 2004	FY 2013	U.S. Fish and Wildlife Service, Missouri Department of Conservation, U.S. Fish and Wildlife Service, Partners for Fish and Wildlife	Work type not yet selected	Labor type not yet selected	Land owners Tom and Cathy Aley continue to purchase adjacent properties within the cave's recharge area or sites adjacent to the recharge zone. As of August 2007, a total of nearly 2700 acres, including approximately 100 acres purchased within the current fiscal year. Other properties will be targeted for voluntary enrollment in long term conservation agreements or easements for other parcels- see pages 41, 92
Tumbling Creek cavesnail (Antrobia culveri)	3	2.4.2	Partner with agencies to hard surface Wolf Road	Not Started			Eastern County Commission (Taney County), Missouri Department of Transportation	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	2.4.3	Partner with agencies to develop road maintenance and management activity guidelines	Ongoing Current	FY 2006	FY 2011	Eastern County Commission (Taney County), Missouri Department of Transportation, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	To be done in conjunction with actions 2.4.1, 2.4.4, and 2.4.5

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Tumbling Creek cavesnail (Antrobia culveri)	2	2.4.4	Partner with agencies to develop a plan for application of herbicides and other chemicals	Ongoing Current	FY 2006	FY 2011	Eastern County Commission (Taney County), Missouri Department of Transportation, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	3	2.4.5	Partner with agencies to develop a plan for new roads and road realignments	Not Started			Eastern County Commission (Taney County), Missouri Department of Transportation, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	To be done in conjunction with actions 2.4.1, 2.4.3, and 2.4.4
Tumbling Creek cavesnail (Antrobia culveri)	3	2.4.6	Identify tertiary roads that may be a source of soil deposition	Not Started			Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	2.41	Partner with agencies to develop an emergency contingency plan for potential highway spills	Not Started			Michigan Department of Natural Resources, Eastern County Commission (Taney County), Missouri Department of Transportation, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	To be done in conjunction with actions 2.4.3, 2.4.4, and 2.4.5
Tumbling Creek cavesnail (Antrobia culveri)	3	2.5.1	Encourage the FS to develop a proper grazing demonstration area	Planned	FY 2007	FY 2011	U.S. Fish and Wildlife Service, U.S. Forest Service, Tumbling Creek Cavesnail Work Group and Partnership, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	3	2.5.2	Review FS grazing plans	Ongoing Current	FY 2000 - FY 2004	FY 2023	U.S. Fish and Wildlife Service	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$40000

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Tumbling Creek cavesnail (Antrobia culveri)	3	2.5.4	Review fire management and wildlife control activities on USFS land	Ongoing Current	FY 2000 - FY 2004	FY 2023	U.S. Fish and Wildlife Service	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$40000
Tumbling Creek cavesnail (Antrobia culveri)	3	2.53	Provide FS grazing guidelines to other agencies	Not Started			U.S. Forest Service, Farm Services Administration, Missouri Department of Conservation, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$80000
Tumbling Creek cavesnail (Antrobia culveri)	3	2.6.1	Create GIS layers for land ownership and various activities within the cave s recharge area	Not Started			U.S. Geological Survey, Missouri Resource Assessment Partnership, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	3	2.6.2	Determine relationships of land use practices on water quality using GIS technology	Not Started			U.S. Geological Survey, Missouri Resource Assessment Partnership, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	2.7	Encourage Federal agencies that have jurisdictional responsibilities within the recharge area to develop management plans for Antrobia culveri	Ongoing Current	FY 2000 - FY 2004	FY 2011	To be determined, Rural Electrification Administration, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	3	2.8	Encourage utility companies to develop management plans for Antrobia culveri	Not Started			To be determined, Rural Electrification Administration, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	2.9	Initiate formal consultation between the USFWS and the USACE on the operation of Bull Shoals Reservoir	Complete	FY 2000 - FY 2004	FY 2005	U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers	Work type not yet selected	Labor type not yet selected	Consultation between the FWS and the COE was completed informally without the need for formal consultation that was originally anticipated

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Tumbling Creek cavesnail (Antrobia culveri)	1	3.1.1	Collect & analyze existing water quality parameters	Ongoing Current	FY 2000 - FY 2004	FY 2024	U.S. Geological Survey, Ozark Underground Laboratory, Southwest Missouri State University	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$160000
Tumbling Creek cavesnail (Antrobia culveri)	1	3.1.2	Collect & analyze additional water quality parameters	Ongoing Current	FY 2000 - FY 2004	FY 2024	U.S. Geological Survey, Ozark Underground Laboratory, Southwest Missouri State University	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$160000
Tumbling Creek cavesnail (Antrobia culveri)	1	3.1.3	Monitor water quality at other sites in recharge area	Ongoing Current	FY 2000 - FY 2004	FY 2024	U.S. Geological Survey, Michigan Department of Natural Resources, Ozark Underground Laboratory, Southwest Missouri State University	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$80000. Done in coordination with USEPA
Tumbling Creek cavesnail (Antrobia culveri)	1	3.2.1	Analyze SMPD samples	Not Started	FY 2000 - FY 2004	FY 2007	U.S. Geological Survey, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	1	3.2.2	Evaluate sediments in Tumbling Creek	Ongoing Current	FY 2000 - FY 2004	FY 2011	U.S. Geological Survey, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	1	3.2.3	Conduct additional analyses of bat guano	Not Started			U.S. Geological Survey, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	1	3.2.4	Collect and analyze tissue samples of macroinvertebrates	Not Started			U.S. Geological Survey, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	3.2.5	Conduct toxicity tests using surrogate species	Not Started			U.S. Geological Survey, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	3.2.6	Investigate the potential impact of nutrient enrichment on Tumbling Creek	Ongoing Current	FY 2000 - FY 2004	FY 2013	U.S. Geological Survey, Michigan Department of Natural Resources, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	3.2.7	Monitor Tumbling Creek for Acinetobacter sp. bacterium & water molds	Not Started			U.S. Geological Survey, Michigan Department of Natural Resources, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$80000

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Tumbling Creek cavesnail (Antrobia culveri)	1	3.3.1	Identify potential sources of contaminants	Ongoing Current	FY 2000 - FY 2004	FY 2013	U.S. Geological Survey, Ozark Underground Laboratory, Taney County Soil and Water Conservation District	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	1	3.3.2	Evaluate sediments within stream valleys for potential contaminants	Ongoing Current	FY 2000 - FY 2004	FY 2013	U.S. Geological Survey, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	3.3.3	Evaluate potential spills and impacts of current road maintenance of roads crossing recharge area	Ongoing Current	FY 2006	FY 2016	Eastern County Commission (Taney County), Missouri Department of Transportation	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	3	3.3.4	Evaluate the potential impact of toxins&FRom endophytic fungi on Antrobia culveri	Not Started			U.S. Geological Survey, Southwest Missouri State University	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	1	4.1.1	Monitor cave snail numbers	Ongoing Current	FY 2000 - FY 2004	FY 2023	U.S. Fish and Wildlife Service, Missouri Department of Conservation, Missouri Western State College, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	FY5 through 20\$80000
Tumbling Creek cavesnail (Antrobia culveri)	1	4.1.2	Conduct life history ecology studies	Not Started			J. Lewis, Missouri Department of Conservation, Missouri Western State College, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$100000
Tumbling Creek cavesnail (Antrobia culveri)	1	4.1.3	Conduct reproductive studies	Planned	FY 2008	FY 2011	J. Lewis, Missouri Department of Conservation, Missouri Western State College, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$20000
Tumbling Creek cavesnail (Antrobia culveri)	1	4.1.4	Conduct food habit studies	Planned	FY 2008	FY 2011	J. Lewis, Missouri Department of Conservation, Missouri Western State College, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	

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Tumbling Creek cavesnail (Antrobia culveri)	2	4.1.5	Conduct PVA	Not Started			To be determined, University of Minnesota	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	1	4.1.6	Establish physiological parameters	Not Started			J. Lewis, Missouri Department of Conservation, Missouri Western State College, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$20000
Tumbling Creek cavesnail (Antrobia culveri)	2	4.2	Survey associated macroinvertebrates	Ongoing Current	FY 2000 - FY 2004	FY 2023	J. Lewis, Missouri Department of Conservation, Missouri Western State College, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	To be done during survey for Antrobia culveri (action 1.4 above)
Tumbling Creek cavesnail (Antrobia culveri)	2	4.3.1	Investigate relationship of bat guano and energy flow using a surrogate species	Not Started			U.S. Geological Survey, J. Lewis, Missouri Department of Conservation, Missouri Western State College, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$5000
Tumbling Creek cavesnail (Antrobia culveri)	2	4.3.2	Study bat guano relationship to food habits of Antrobia culveri	Not Started			U.S. Geological Survey, J. Lewis, Missouri Department of Conservation, Missouri Western State College, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$5000
Tumbling Creek cavesnail (Antrobia culveri)	2	4.4.1	Install new gate or protection mechanism	Complete	FY 2000 - FY 2004	FY 2000 - FY 2004	To be determined, Missouri Department of Conservation, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	4.4.2	Conduct before & after estimates of gray bats	Ongoing Current	FY 2000 - FY 2004	FY 2008	Missouri Department of Conservation	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	4.4.3	Conduct before and after measurements of bat guano	Not Started			Missouri Department of Conservation, Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	

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Tumbling Creek cavesnail (Antrobia culveri)	2	4.4.4	Monitor new protection mechanism once every year for first 5 years; once every two years thereafter	Ongoing Current	FY 2006	FY 2023	U.S. Fish and Wildlife Service, Missouri Department of Conservation	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	5.10	Distribute Service brochures on caves and karst	Not Started	FY 2000 - FY 2004	FY 2023	U.S. Fish and Wildlife Service, Farm Services Administration, Missouri Department of Conservation, Ozark Underground Laboratory, Taney County Soil and Water Conservation District, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	Development of program, will take one year- providing program will be ongoing
Tumbling Creek cavesnail (Antrobia culveri)	2	5.11	Partner with regional and/or county extension agents in the development and distribution of outreach materials	Not Started			To be determined, Missouri Department of Conservation, Taney County Soil and Water Conservation District, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$16000
Tumbling Creek cavesnail (Antrobia culveri)	2	5.2	Develop and distribute outreach materials on the Tumbling Creek cavesnail	Ongoing Current	FY 2000 - FY 2004	FY 2024	U.S. Fish and Wildlife Service, New York State Office of Parks, Recreation and Historic Preservation, Missouri Department of Conservation, Ozark Underground Laboratory, Taney County Soil and Water Conservation District, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	Development of materials will take 1-3 years but distribution will be ongoing

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Tumbling Creek cavesnail (Antrobia culveri)	2	5.3	Develop joint letter among agencies outlining management actions for the Tumbling Creek cavesnail	Not Started			U.S. Fish and Wildlife Service, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	2	5.4	Develop and give presentation to local schools and interested groups	Ongoing Current	FY 2000 - FY 2004	FY 2023	U.S. Fish and Wildlife Service, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	Development of presentation will take one year-providing program will be ongoing
Tumbling Creek cavesnail (Antrobia culveri)	2	5.5	Provide tours of cave and surrounding areas to local residents and schools	Ongoing Current	FY 2000 - FY 2004	FY 2023	Ozark Underground Laboratory	Work type not yet selected	Labor type not yet selected	Cave owner Tom Aley continues to provide 2-3 professional cave tours to employees of the Missouri Department of Transportation. During the last reporting period, Mr. Aley also provided tours to high school teachers and provided a tour to representatives of forestry departments of several state agencies.
Tumbling Creek cavesnail (Antrobia culveri)	2	5.6	Provide articles for local and regional newspapers and magazines on the Tumbling Creek cavesnail	Ongoing Current	FY 2000 - FY 2004	FY 2023	U.S. Fish and Wildlife Service, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$32000

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Tumbling Creek cavesnail (Antrobia culveri)	2	5.7	Develop an adopt a cavesnail program for local schools	Not Started			U.S. Fish and Wildlife Service, New York State Office of Parks, Recreation and Historic Preservation, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	Development of program, will take one year- providing program will be ongoing
Tumbling Creek cavesnail (Antrobia culveri)	2	5.8	Develop and distribute a handout on available land owner incentive programs	Not Started			U.S. Fish and Wildlife Service, Farm Services Administration, Missouri Department of Conservation, Ozark Underground Laboratory, Taney County Soil and Water Conservation District, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	Development of program, will take one year- providing program will be ongoing; TCSWCD would likely assist in distributing handout
Tumbling Creek cavesnail (Antrobia culveri)	2	5.9	Distribute MDC brochures on caves and karst	Ongoing Current	FY 2000 - FY 2004	FY 2024	U.S. Fish and Wildlife Service, Farm Services Administration, Missouri Department of Conservation, Ozark Underground Laboratory, Taney County Soil and Water Conservation District, Natural Resources Conservation Service	Work type not yet selected	Labor type not yet selected	Development of program, will take one year- providing program will be ongoing

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Tumbling Creek cavesnail (Antrobia culveri)	3	6	Develop a participation and implementation plan to facilitate recovery of the Tumbling Creek cavesnail	Not Started			U.S. Fish and Wildlife Service, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	
Tumbling Creek cavesnail (Antrobia culveri)	3	7.1	Regularly evaluate status of species	Ongoing Current	FY 2000 - FY 2004	FY 2023	U.S. Fish and Wildlife Service, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$16000
Tumbling Creek cavesnail (Antrobia culveri)	3	7.2	Reassess listing criteria	Not Started			U.S. Fish and Wildlife Service, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$16000
Tumbling Creek cavesnail (Antrobia culveri)	3	7.3	Refine downlisting and delisting criteria as needed	Not Started			U.S. Fish and Wildlife Service, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$16000
Tumbling Creek cavesnail (Antrobia culveri)	3	7.4	Revise recovery plan as needed	Not Started			U.S. Fish and Wildlife Service, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	

Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Tumbling Creek cavesnail (Antrobia culveri)	3	7.5	Evaluate success of management plans and conservation programs	Not Started			U.S. Fish and Wildlife Service, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$1000
Tumbling Creek cavesnail (Antrobia culveri)	3	8	Develop a post-delisting monitoring plan	Not Started			U.S. Fish and Wildlife Service, Missouri Department of Conservation, Ozark Underground Laboratory, Tumbling Creek Cavesnail Work Group and Partnership	Work type not yet selected	Labor type not yet selected	FY5 through 20 \$5000. Development will take only 1 year but implementation will take a minimum of 5 years